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PENSOFT

Telipogon jucusbambae (Orchidaceae), the rediscovery of a marvelous *Telipogon* from Peru

Carlos Martel,[1] Marcos Salas[2]

1 Institute of Evolutionary Ecology and Conservation Genomics, University of Ulm, Helmholtzstraße 10-1 Containerstadt, D-89081 Ulm, Germany.
2 ONG Ucumari, 16 de Julio 730, Leymebamba, Chachapoyas, Peru.
Corresponding author: Carlos Martel, carlos.martel-gora@uni-ulm.de

Abstract

Telipogon jucusbambae, a Peruvian endemic species, is rediscovered and its distributional range greatly extended. The species was known from a single collection made more than 50 years ago. A description, images of living specimens, a distribution map, and taxonomic comments on related species are provided. Furthermore, we propose the *T. falcatus* species complex for a group of species closely related to *T. jucusbambae*.

Key words

Type collection; endemic species; distributional range extension; *Telipogon falcatus* species complex.

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Introduction

Telipogon Kunth is a Neotropical orchid genus distributed from Mexico, Central America, and the Caribbean, and from Venezuela to Bolivia, through the Andes (Pridgeon et al. 2009, Martel and Nauray 2013). Species of *Telipogon* grow exclusively at mid-elevations in the cloud forests from 500 to 3500 m (Collantes and Martel 2015). In Peru, more than 50 species have been recorded (Collantes and Martel 2015), and most of them are country endemics or present a very restricted distribution (Nauray and Galán 2008). Thus, several *Telipogon* species are only known from 1 locality or even 1 collection (e.g. *Telipogon atropurpurea* D.E.Benn. & Ric. Fernández, *T. auriculatus* D.E.Benn. & Christenson, *T. campoverdei* D.E.Benn. & Ric.Fernández, *T. fritillum* Rchb.f. & Warsz., *T. davidsonii* D.E.Benn. & Christenson, *T. mendiolae* Dodson & D.E.Benn., *T. piyacnuensis* D.E.Benn. & Christenson, and *T. sayakoae* D.E.Benn. & Christenson, Roque and León 2006).

However, careful studies have shown that *Telipogon* species are better represented than we thought. Thus, some species are represented at different Peruvian and international herbaria, but without any specific identification, or they were misidentified as already observed for other Peruvian *Telipogon* (e.g. Martel and Nauray 2013, Martel 2016). For instance, *Telipogon jucusbambae* Dodson & R.Escobar was only known from the type specimen collected in 1965 by *A.C. Hamilton* and *P.M. Holligan 1074* (K) and no further details have been given about this species since its publication (Dodson 1998).

Methods

During field exploration in the surroundings of Leymebamba town (Amazonas, northern Peru) between July and September 2015, as part of a study of the Chillchos Private Reserve's flora diversity, we found a population of a remarkable species of *Telipogon*. The collected

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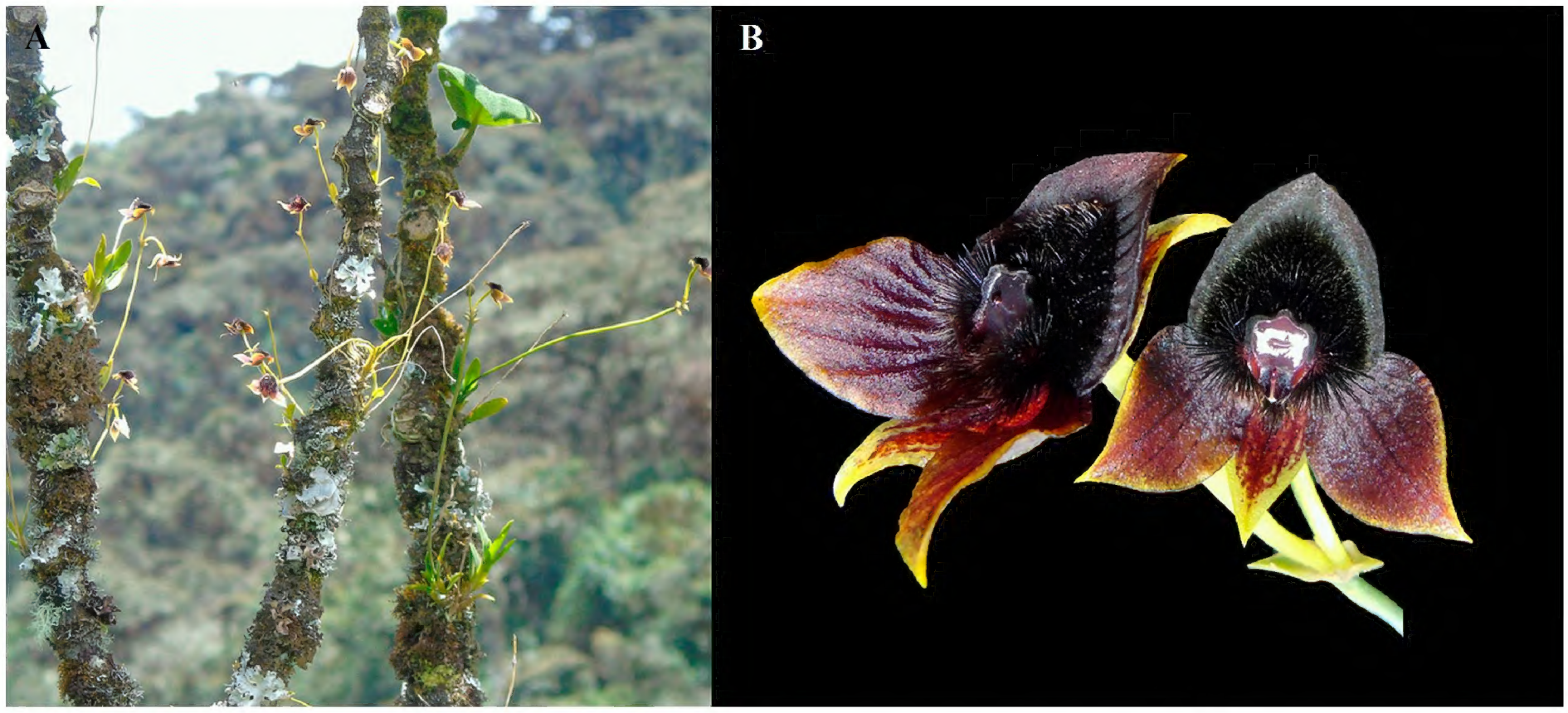

Figure 1. *Telipogon jucusbambae*. **A.** Habit. **B.** Flower, frontal view. **C.** Dissected perianth, frontal view. **D.** lip, frontal and side view. **E.** Column, frontal and side view. **F.** Anther cap. **G.** Pollinarium, frontal and side view.

specimens were mounted and subsequently processed and deposited at the Herbarium of Universidad Nacional Mayor de San Marcos (USM), Lima, Peru.

The morphological characters regarding the identification are based on Dodson (1998). The herbarium collections of USM and HOXA (herbarium acronyms follow Thiers 2017), were consulted in search of similar specimens and for species identification. The collected and other specimens found in the herbaria were determined as *Telipogon jucusbambae* Dodson & R.Escobar. Here, we report further collections of *T. jucusbambae* that increase the known geographic distribution and provide details of new populations. An updated description, an illustrate plate, *in situ* photographs, and a distribution map are also provided.

Data on the distribution of the species is presented in a map, with countries and Departmental limits and relief. The distribution map was made using DIVA-GIS v. 7.5 (Hijmans et al. 2012). The conservation assessment complies with the criteria of the IUCN (2014), where the extent of occurrence (EOO) and the area of occupancy (AOO) were estimated using GeoCAT program, when AOO based on defined cell width 400 m (Bachman et al. 2011).

Results

Telipogon jucusbambae Dodson & R.Escobar, Orquideología 21: 65. 1998.
Figures 1, 2.

Type. Peru. San Martín: [Mariscal Cáceres] Huallaga [basin]. Valley of Río Apisoncho, 30 km above Jucusbamba, 2800 m, 8 June 1965, A.C. Hamilton & P.M. Holligan 1074 (holotype, K).

Description. Plant: epiphytic, sympodial, subcaulescent to 35 cm tall (including the inflorescence). Roots 0.2–0.4 cm in diameter, basal and along the stem. Stem: to 4.5 cm, distichous and imbricating leaf-sheaths. Leaves: 5–9 ′ 1.2–1.8 cm, 3–5, subcoriaceous, elliptic, apiculate apex, deeply conduplicate base. Inflorescence: an apical raceme, up to 30 cm long, successively, 2–5 flowered, flattened, pedunculate. Floral bracts: 0.9–1.4 cm long, ovate, cymbiform, conduplicate, dorsally carinate. Ovary: 3.2–4 × 0.2–0.3 cm, triquetrous, shortly winged, pedicelate. Flowers: ca 3 cm diameter, non-resupinate. Sepals: reddish purple with green margins; dorsal sepal: 16–21 × 7–12 mm, ovate, carinate, 4-veined; lateral sepals: 13–16 × 6–8 mm, widely ovate, slightly carinate, 3-veined. Petals: 1.6–2.4 × 0.7–1.3 cm, colored as the sepals, widely obovate, acute, slightly acuminate, 9- to 11-veined, veins dark purple thin and inconspicuous, setose at the bottom. Lip: 15–17 × 13–15 mm, red purple, transversally cordate, apiculate, 21-veined, veins anastomosed, convex, with a callus-like structure; callus-like structure: 13–16 × 12–13 mm, black, transversally cordate, densely setose, setae up to 3 mm long. Column: 5 × 4 mm, dark purple, densely setose, setae up to 8 mm long; setae dark purple, unbranched. Stigma: 3.5 × 3 mm, subquadrate, 3-lobed. Rostellum: erect. Anther cap: pale brown. Pollinarium: 0.5 × 1.1 mm; pollinia: 4, in 2 unequal pairs, the outer pair larger, oblong-obovoid, the inner pair smaller, ellipsoid; caudicles hyaline; viscidium ancistrous.

Specimens examined. Peru. Amazonas: Chachapoyas, Leimebamba, Cordillera Yasgolga, 3250 m, 6 August 2015, C. Martel and M. Salas 65 (USM). Cajamarca: Santa Cruz, Pulán; El Molino, 2900 m, 2 August 2007, L. Santa Cruz 2038 (USM); same area, 6 August 2008, L. Santa Cruz 2424 (USM). Pasco: Oxapamapa, Dist. Huancabamba. Quebrada Sector Milpo, 2910 m, 20 August 2005, C. Arias 499 (HOXA). [Geographic coordinates are withheld due to the rarity and sensitivity of this threatened species.]

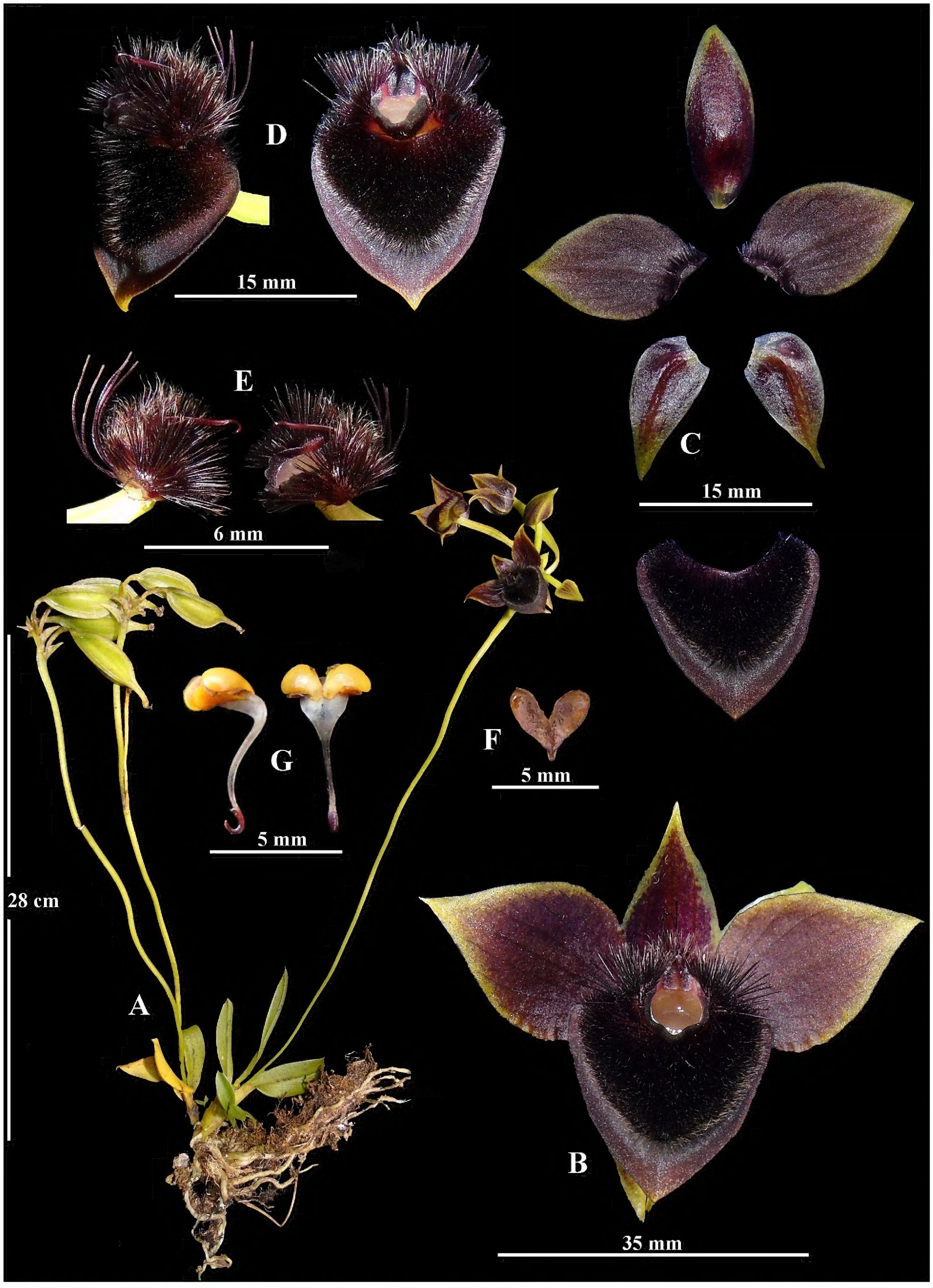

Figure 2. *Telipogon jucusbambae*. **A.** A tree full with plants in bloom; note the flowers are non-resupinate independent of the orientation of the inflorescence, from the Cordillera Yasgolga, Department of Amazonas. **B.** Details of the flower showing the black callus-like structure.

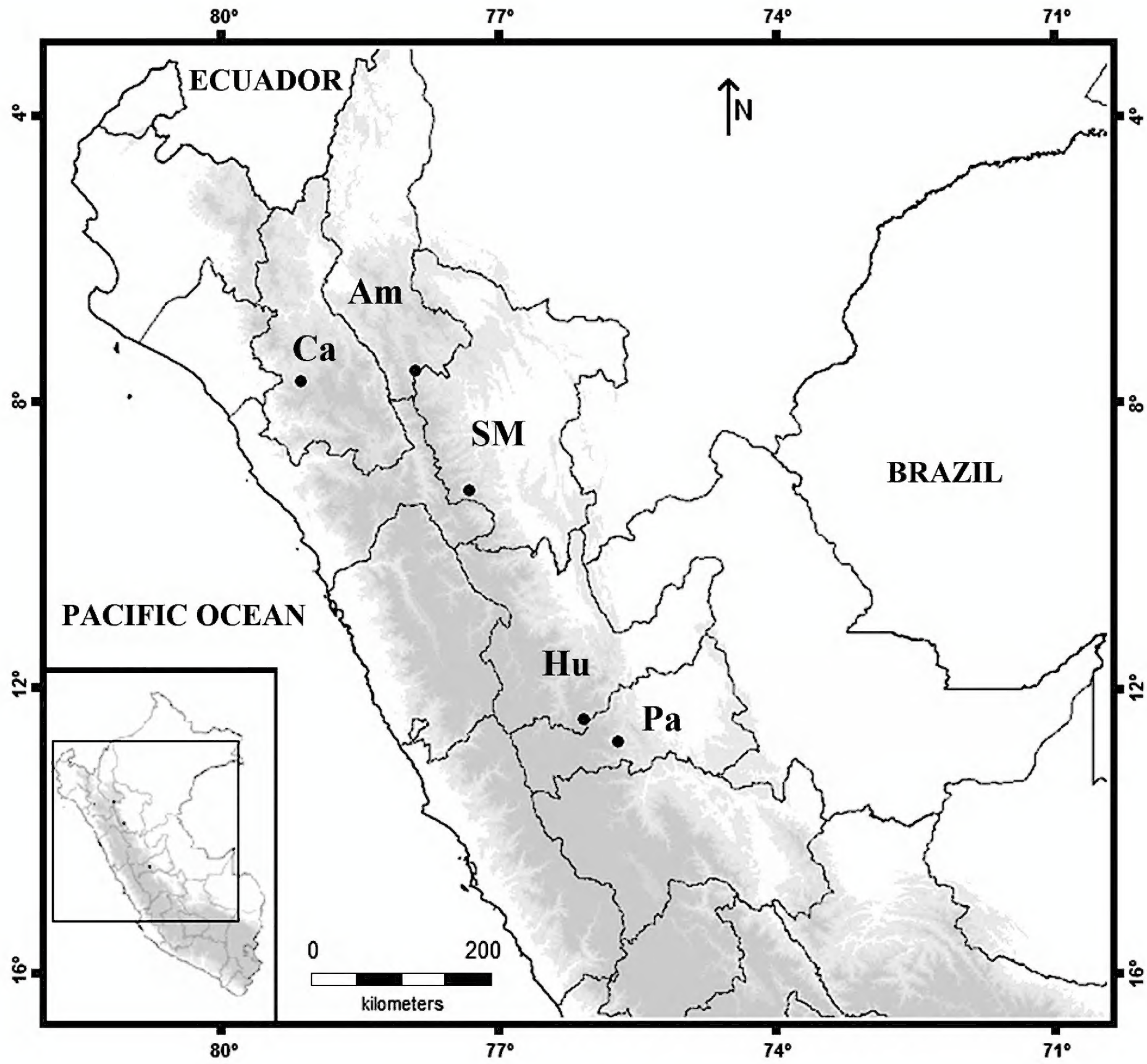

Figure 3. Geographical locations of *Telipogon jucusbambae* in Amazonas (Am), Cajamarca (Ca), Huanuco (Hu) and Pasco (Pa) departments in Peru.

Discussion

Distribution, habitat and ecology. *Telipogon jucusbambae* is endemic to Peru, growing in the Andean cloud forest of northern and central Peru from 2800 to 3300 m. The species was formerly known from the surroundings of Jucusbamba town, Department of San Martín. Herbarium and photographic material of plants coming from the Departments of Amazonas, Cajamarca, Huánuco and Pasco were recently identified as *T. jucusbambae* (Fig. 3). These records widely expand the known distribution range of the species. The present reports extend its distribution by nearly 200 and 300 linear km northward and southward, respectively, from Amazonas to Pasco Departments. *Telipogon jucusbambae* blooms during the dry season (May to October, includes austral autumn and winter). Pollination would be also carried out by tachinid male flies as already shown for other *Telipogon* species (Martel et al. 2016). The species seems to have a high reproductive success, as seed pods were frequently observed in the natural populations.

Local Names. The species is known in Cajamarca as *ushun* (Santa Cruz 2011).

Conservation status. The populations represented by several individuals were reported in 5 localities, with EOO estimated as 28,502 km^2 and AOO estimated as 0.8 km^2. Anthropic activities may imperil its populations specially those in the Departments of Amazonas and Cajamarca where livestock and agriculture is expanding. Therefore, following IUCN (2014) criteria, *Telipogon jucusbambae* should be considered Endangered category (B2a, B2c).

Taxonomic comments. *Telipogon jucusbambae* presents large showy dark violet flowers with a densely setose lip. This species is distinctively characterized by presenting a cordate lip with a developed black callus-like structure, which is a densely setose area that occupies more than the

half of the lip (Figs. 1 and 2). Although Dodson (1998) pointed out that *T. jucusbambae* is closely related to *T. tungurahuae* Dodson & R.Escobar, it might be closer to *T. falcatus* Rchb.f. because *T. jucusbambae* and *T. falcatus* present a highly developed callus-like structure on the lip (Mutis 2011, Martel and Trujillo 2015). *Telipogon jucusbambae* and *T. falcatus* differs in the form of the petals (widely ovate in the former and falcate in the latter), the lip form (transversally cordate in the former and longitudinally cordate in the latter) and the relative size of the callus-like structure (occupying nearly 70% of the lip in the former and 90% in the latter). *Telipogon tungurahuae* does not bear a callus-like structure, but the setae are scattered on the lip (Dodson 1998). Christenson (2003) pointed out that *T. portillae* Christenson has not apparent close relatives; nevertheless, *T. falcatus*, *T. jucusbambae* and *T. tungurahuae* might be its close relatives. All of those 4 species may conform a cohesive group within the genus *Telipogon*. Species of the *Telipogon falcatus* complex, which is here proposed, are characterized by being subcaulescent, presenting big and showy dark flowers, with a cordate, setose lip, and bear unbranched long setae on the column (Dodson 1998, Christenson 2003, Mutis 2011, Martel and Trujillo 2015). The setae on the lip are densely arrenge giving the appearence of a callus (the callus-like structure of *T. falcatus*, *T. jucusbambae* and *T. portillae*), except in *T. tungurahuae*, which presents it scattered throught the whole lip. Species of this complex are distributed from central Colombia, through the Andes, to central Peru.

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Authors' Contributions

MS collected and take photos of wild specimens; CM reviewed and identified the specimens, and wrote the manuscript.

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